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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/687,768	10/20/2003	Yukio Narukawa	AZU.002	9596

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EXAMINER	
TRINH, HOA B	

ART UNIT	PAPER NUMBER
2814	

DATE MAILED: 05/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/687,768	NARUKAWA ET AL.	
	Examiner	Art Unit	
	Vikki H. Trinh	2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 March 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4-10 and 12-21* is/are pending in the application.

4a) Of the above claim(s) *14-18* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4-10,12,13 and 19-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group I in the reply filed on 07/13/05 is acknowledged.

2. Claims 14-18 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Group II, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 07/13/05.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 5-6, 10, 13, 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Hosoba (5,814,839)

As to claim 1, Hosoba discloses a semiconductor light-emitting device (fig. 6), comprising a substrate 51 (fig. 6) and a n-type semiconductor layer 52 on the substrate 51, a recess (fig. 6), an active layer 53 (fig. 6) with a portion located within the recess and a portion located outside of the recess (fig. 6), and a p-type semiconductor layer 54 (fig. 6) stacked on a major surface of the substrate 51 (fig. 6) with a portion located within the recess and a portion located outside of the recess (fig. 6), wherein the portion of the p-type layer 54 has a bottom surface having the same planar orientation as the bottom surface of the recess and sidewalls having the same planar orientation as the sidewalls of the recess.

As to claim 5, Hosoba discloses that at least one of surfaces of the n-type semiconductor layer 52 (fig. 6) contiguous to the active layer 53 (fig. 6) defines the major surface of the n-type semiconductor layer 52 (fig. 6).

As to claim 6, Hosoba discloses that at least one of surfaces of the n- type semiconductor layer 250 (fig. 4) contiguous to the active layer 310 (fig. 4) is a surface vertical to the major surface of the n- type semiconductor layer 250 (fig. 4).

As to claim 10, Hosoba shows that the active layer 53 (fig. 6) may inherently include a striped M or A plane , as viewed from an upper surface of the n- type semiconductor layer having a recess.

As to claim 13, Hosoba teaches that the active layer 53 (fig. 6) emits light components having two or more different major peak wavelengths in which the light components are mixed to show a color.

As to claim 21, Hosoba discloses that the recess is a triangle-shaped recess (fig. 6).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 2 , 4, 7-9, 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hosoba in view of Romano et al. (6,285,698; hereinafter 6,285,698).

Hosoba discloses the invention substantially as claimed, except that each of the semiconductor layers 52, 54 and the active layer 53 comprises a gallium nitride semiconductor layer

Romano discloses an analogous LED having an n-type semiconductor layer 250, an active layer 310, and a p-type layer 320; each of the layers comprises gallium nitride (col. 3, lines 45-55, col. 4, lines 60-65, col. 5, lines 30-55).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Hosoba with the gallium nitride, as taught by Romano, so as to provide a wide range of wavelengths (col. 2, lines 5-10).

As to claim 4, Romano teaches that the active layer 310 (fig. 4) has a quantum well structure including a well layer comprising Indium and gallium nitride (col. 5, lines 30-35) so as to provide a wide bandgap necessary for short wavelength visible emission (col. 2, lines 15-20.)

As to claims 7 and 20, Hosoba in view of Romano discloses that the major surface of the n- type semiconductor layer 52 (fig. 6) may be called a "C" plane of the gallium nitride semiconductor (fig. 4, and col. 4, lines 60-65); wherein the recess is a strip-shaped recess (fig. 6). Note that the plane's label "C" is inherently included.

As to claim 8, Hosoba in view of Romano discloses the surface vertical to the major surface of the n- type semiconductor layer 52 (fig. 6) may be called an "A" or "M" plane of a gallium nitride semiconductor (Romano, fig. 4, and col. 4, lines 60-65). Note that the plane's label "A" or "M" is inherently included.

As to claim 9, Hosoba discloses the invention substantially as claimed. However, Hosoba does not explicitly teach that the M or A planes of the active layer make an angle of 30, 60, 90, 120, 150, 210, 240, 270, 300, or 330 degrees, as viewed from the upper surface of the layer 52 (fig. 6) having a recess 53 (fig. 6). Nonetheless, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Hosoba with the active layer having M or A planes that make a specific angle of 30, 60, 90, 120, 150, 210, 240, 270, 300, or 330 degrees, as viewed from the upper surface of the first conductive layer with the recess, since it is a prima facie of obvious to an artisan for routine optimization and experimentation to configure the planes with the specific angle, as claimed, because applicants have not yet established any criticality for the specific angle.

Normally, it is to be expected that a change in temperature, or degrees, or in thickness, or in time, would be an unpatentable modification. Under some circumstances, however, changes such as these may impart patentability to a process if the particular ranges claimed produce a new and unexpected result which is different in kind and not merely degree from the results of the prior art...such ranges are termed "critical ranges and the applicant has the burden of proving such criticality.... More particularly, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller 105 USPQ233, 255 (CCPA 19553.

As to claim 12, Romano discloses a first electrode 410 (fig. 4) is formed on at least a part of a surface of the n- type layer 230 (fig. 4), the surface being exposed, and a second electrode 420 (fig. 4) is formed on at least a part of the surface of the p- type layer 340 (fig. 4). Regarding to the rejection under 35 USC 103(a), how the surface is removed, either by etching or by other process, pertains to an intermediate step that does not affect the final structure of the device. See MPEP 2113. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe*, 777 F. 2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

9. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hosoba, as applied to claim 1 above.

Hosoba discloses the invention substantially as claimed. However, Hosoba does not explicitly teach that the M or A planes of the active layer make an angle of 30, 60, 90, 120, 150,

210, 240, 270, 300, or 330 degrees, as viewed from the upper surface of the first conductive layer 250 (fig. 4) having a recess 255 (fig. 3). Nonetheless, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Hosoba with the active layer having M or A planes that make a specific angle of 30, 60, 90, 120, 150, 210, 240, 270, 300, or 330 degrees, as viewed from the upper surface of the first conductive layer with the recess, since it is a prima facie of obvious to an artisan for routine optimization and experimentation to configure the planes with the specific angle, as claimed, because applicants have not yet established any criticality for the specific angle.

Normally, it is to be expected that a change in temperature, or degrees, or in thickness, or in time, would be an unpatentable modification. Under some circumstances, however, changes such as these may impart patentability to a process if the particular ranges claimed produce a new and unexpected result which is different in kind and not merely degree from the results of the prior art...such ranges are termed "critical ranges and the applicant has the burden of proving such criticality.... More particularly, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller 105 USPQ233, 255 (CCPA 19553.

Double Patenting

10. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re*

Vogel, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

11. Claims 1-2, 4-10, 12-13, 19-21 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 2-19 of copending Application No. 10/314,444. Although the conflicting claims are not identical, they are not patentably distinct from each other because in the present patent application '768 , the LED having a n-type semiconductor layer, a recess, a p-type semiconductor layer, wherein the layers includes gallium nitride, is essentially the similar to the claims of the patent application '444.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Response to Arguments

12. Applicant's arguments filed 03/03/06 have been fully considered but they are moot in view of the new rejection.

Conclusion

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Vikki Trinh whose telephone number is (571) 272-1719. The Examiner can normally be reached from Monday-Friday, 9:00 AM - 5:30 PM Eastern Time. If attempts to reach the examiner by telephone are unsuccessful, the Examiner's supervisor, Mr. Wael Fahmy, can be reached at (571) 272-1705. The office fax number is 703-872-9306.

Any request for information regarding to the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Also, status information for published applications may be obtained from either Private PAIR or Public Pair. In addition, status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. If you have questions pertaining to the Private PAIR system, please contact the Electronic Business Center (EBC) at 866-217-9197 (toll free).

Lastly, paper copies of cited U.S. patents and U.S. patent application publications will cease to be mailed to applicants with Office actions as of June 2004. Paper copies of foreign

patents and non-patent literature will continue to be included with office actions. These cited U.S. patents and patent application publications are available for download via the Office's PAIR. As an alternate source, all U.S. patents and patent application publications are available on the USPTO web site (www.uspto.gov), from the Office of Public Records and from commercial sources. Applicants are referred to the Electronic Business Center (EBC) at http://www.uspto.gov/ebc/index.html or 1-866-217-9197 for information on this policy. Requests to restart a period for response due to a missing U.S. patent or patent application publications will not be granted.

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HOWARD WEISS
PRIMARY EXAMINER